

REMARKS

The application has been reviewed in light of the Non-Final Office Action mailed November 8, 2005. At the time of the Non-Final Office Action, claims 1-120 were pending in this application. Claims 34-71 and 116-120 are withdrawn. Examiner has objected to claim 25, and rejected claims 1-33 and 72-115.

Applicant respectfully requests that Examiner enter the above amendments. Applicant further requests reconsideration of the application in view of the amendments and the remarks contained herein.

Restriction Requirement

On November 3, 2005, during a telephone conversation with Examiner, claims 1-33 and 72-115 were provisionally elected in response to Examiner's restriction requirement. Applicant hereby confirms this provisional election and cancels claims 34-71 and 116-120. Applicant respectfully reserves the right to present the cancelled claims in one or more divisional applications

Abstract

Please replace the current Abstract with the following:

A method and plug for separating fluids in subterranean wells is provided. The plug enters a passage at an interface of successively introduced fluids. The plug comprises an outer body and a detachable inner mandrel attached to the outer body. An Assembly comprising a plurality of plugs may also be used, in which case the plurality of plugs releasably attach to each other.

Claim Objection

Examiner objected to claim 25, specifically stating “the term “the baffle adapter” lacks antecedent basis.” Applicant has corrected claim 25 as suggested by Examiner.

Claim Rejections 35 U.S.C. § 102(b)

Claims 1-18, 24, 27, 30, 31, 72-86, 90-96, and 99-115 have been rejected under 35 U.S.C. 102(b) as being anticipated by North (EP 0869257). Specifically, Examiner stated as follows in bold typeface:

EP 0869257 discloses a method that includes, with respect to claim 1, a method of separating fluids successively introduced into a passage comprising the step of introducing a plug at an interface of the successively introduced fluids, wherein the plug comprises an outer body and a detachable inner mandrel attached to the outer body. With respect to the depending claims, the reference teaches the limitations as claimed, including a frangible device and applying differential pressure. With respect to claim 5, the reference discloses a method that includes a method of separating fluids successively introduced into a subterranean well bore, comprising the steps of: introducing a first fluid into the well bore through a casing string; introducing a second fluid into the well bore behind the first fluid such that an interface between the two fluids is formed; suspending an assembly comprising a plurality of plugs within the casing string, wherein at least one of the plugs comprises an outer body and a detachable inner mandrel attached to the outer body; and deploying the at least one plug within the casing string at the interface of the first and second fluids. With respect to the depending claims, the reference teaches the limitations as claimed, including a free fall releasing device (dart), profile, latch-down mechanism, frangible device, differential pressure, and float valve. See the entire document, especially Figs. 1-4 and cols. 4-12. With respect to claims 72 and 101, the reference discloses a plug system for separating fluids successively introduced into a passage comprising; an assembly comprising a plurality of plugs, wherein at least one plug comprises an outer body and a detachable inner mandrel attached to the outer body; and wherein the plurality of plugs are releasably attached to each other. With respect to the depending claims, the reference teaches the limitations as claimed, including a profile, latch-down mechanism, frangible device, and wiper fins. See the entire document, especially Figs. 1-4 and cols. 4-12.

Applicant respectfully traverses this rejection as to claims 1-18, 24, 27, 30, 31, 72-86, 90-96, and 99-115.

As to claim 1, North does not disclose “[a] method of separating fluids successively introduced into a passage comprising the step of introducing a plug at an interface of the successively introduced fluids, wherein the plug comprises an outer body and a *detachable inner mandrel* attached to the outer body” (emphasis added). The plugs (18, 20, and 22) of North do not have inner mandrels at all. Rather, they have passageways (46, 60, and 115). A passageway is not a mandrel. Further, the passageways (46, 60, and 115) of North are not “detachable” as required by claim 1.

Applicant notes that North discloses “a tubular member 86 which extends through and is threadedly connected to the top cementing plug 22.” (Column 9, lines 20-22). This tubular member (86) is not a mandrel. However, even if this tubular member (86) were considered a mandrel, Applicant asserts that “threadedly connected” is not “detachable” in this environment. To detach the tubular member (86) from the top cementing plug (22) would require rotation of either the tubular member (86) or the top cementing plug (22) or both. North does not teach, or even suggest this. In fact, it is impractical and highly unlikely. In order to rotate either the top cementing plug (22) or the tubular member (86) would require either rotation of the casing (12), causing the top cementing plug (22) to rotate, or it would require rotation of the drillpipe (16), causing the tubular member (86) to rotate. Either of these approaches would likely cause other parts to undesirably rotate and become detached. This is particularly true when many threaded connections are present, as in North.

Accordingly, independent claim 1 and its dependents, claims 2-4 are patentable over North. Independent claims 5, 72, and 101 and their dependents, claims 6-18, 24, 27, 30, 31,

73-86, 90-96, 99, 100, and 102-115, are patentable over North for analogous reasons. Therefore, Applicant requests that Examiner withdraw her rejection of these claims and allow them to issue.

Claims 1-12, 14-18, 24, 27, 30, 31, 72-86, 90-93, and 99-115 have been rejected under 35 U.S.C. 102(b) as being anticipated by Bass et al. (U.S. 4,364,432) ("Bass"). Specifically, Examiner stated as follows in bold typeface:

US 4,364,432 discloses a method that includes, with respect to claim 1, a method of separating fluids (cement and displacement fluids) successively introduced into a passage comprising the step of introducing a plug 40 at an interface of the successively introduced fluids, wherein the plug comprises an outer body and a detachable inner mandrel 14 attached to the outer body. With respect to the depending claims, the reference teaches the limitations as claimed, including a frangible device 90 and applying differential pressure. With respect to claim 5, the reference discloses a method that includes a method of separating fluids successively introduced into a subterranean well bore, comprising the steps of: introducing a first fluid (cement) into the well bore through a casing string; introducing a second fluid (displacement fluid) into the well bore behind the first fluid such that an interface between the two fluids is formed; suspending an assembly comprising a plurality of plugs 40 within the casing string, wherein at least one of the plugs comprises an outer body and a detachable inner mandrel 14 attached to the outer body; and deploying the at least one plug within the casing string at the interface of the first and second fluids. With respect to the depending claims, the reference teaches the limitations as claimed, including a free fall releasing device (dart 50), profile 26, latch-down mechanism 54, frangible device 90, differential pressure, and float valve 30. See the entire document, especially Figs. 1-5. With respect to claims 72 and 101, the reference discloses a plug system for separating fluids successively introduced into a passage comprising; an assembly comprising a plurality of plugs 40, wherein at least one plug comprises an outer body and a detachable inner mandrel 14 attached to the outer body; and wherein the plurality of plugs are releasably attached to each other. With respect to the depending claims, the reference teaches the limitations as claimed, including a profile, latch-down mechanism, frangible device, and wiper fins. See the entire document, especially Figs. 1-5.

Applicant respectfully traverses this rejection as to claims 1-12, 14-18, 24, 27, 30, 31, 72-86, 90-93, and 99-115.

As to claim 1, Bass does not disclose “[a] method of separating fluids successively introduced into a passage comprising the step of introducing a plug at an interface of the successively introduced fluids, wherein the plug comprises an outer body and a *detachable inner mandrel* attached to the outer body.” While Bass does disclose plugs (40, 50) and a mandrel (14), the plugs (40, 50) do not comprise the mandrel (14). Rather, Bass describes a “mandrel 14 which, in the context of linear cementing apparatus, is part of a setting tool shown generally at 16.” (Column 4, lines 38-40). As to the relationship between the liner wiper plug (40) and the mandrel (14), Bass states that “[t]he central passage of the plug 40 may be engaged by the lower end of the mandrel 14 and aligned with its central passage.” (Column 5, lines 13-15). This further indicates that the mandrel (14) of Bass is not a detachable inner mandrel. As to the pumpdown plug (50), Bass states that “[s]uch a pumpdown plug 50 may be provided . . . for sliding and sealing engagement with the *interior* of the operating string 18 and the mandrel 14.” (Column 5, lines 29-32) (emphasis added). If the plug (50) fits in the interior of the mandrel (14), then the mandrel (14) is clearly not an “inner mandrel.”

Accordingly, independent claim 1 and its dependents, claims 2-4 are patentable over Bass. Independent claims 5, 72, and 101 and their dependents, claims 6-18, 24, 27, 30, 31, 73-86, 90-93, 99, 100, and 102-115, are patentable over Bass for analogous reasons. Therefore, Applicant requests that Examiner withdraw her rejection of these claims and allow these claims to issue.

Claim Rejections 35 U.S.C. § 102(e)

Claims 1-10, 12, 14, 16-18, 24, 27, 31, 72-83, 85, 86, 90, 91, 93, 99, 101-112, and 114 have been rejected under 35 U.S.C. 102(e) as being anticipated by Butterfield (U.S. 6,799, 638). Specifically, Examiner stated as follows in bold typeface:

The applied reference has a common assignee with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131.

US 6,799,638 discloses a method that includes, with respect to claim 1, a method of separating fluids (cement and drilling fluids) successively introduced into a passage comprising the step of introducing a plug 10 at an interface of the successively introduced fluids, wherein the plug comprises an outer body and a detachable inner mandrel 17 attached to the outer body. With respect to the depending claims, the reference teaches the limitations as claimed, including a frangible device 30 and applying differential pressure. With respect to claim 5, the reference discloses a method that includes a method of separating fluids successively introduced into a subterranean well bore, comprising the steps of: introducing a first fluid (cement) into the well bore through a casing string; introducing a second fluid (drilling fluid) into the well bore behind the first fluid such that an interface between the two fluids is formed; suspending an assembly comprising a plurality of plugs 11, 12 within the casing string, wherein at least one of the plugs comprises an outer body and a detachable inner mandrel 17 attached to the outer body; and deploying the at least one plug within the casing string at the interface of the first and second fluids. With respect to the depending claims, the reference teaches the limitations as claimed, including a free fall releasing device (ball or dart), latch-down mechanism, frangible device 30, differential pressure, and float valve (not shown, at bottom of 15). With respect to claims 72 and 101, the reference discloses a plug system for separating fluids successively introduced into a passage comprising; an assembly comprising a plurality of plugs 11, 12, wherein at least one plug comprises an outer body and a detachable inner mandrel 17 attached to the outer body;

and wherein the plurality of plugs are releasably attached to each other. With respect to the depending claims, the reference teaches the limitations as claimed, including a latch-down mechanism, frangible device, and wiper fins. See the entire document, especially Figs. 1-5.

Applicant respectfully traverses this rejection as to claims 1-10, 12, 14, 16-18, 24, 27, 31, 72-83, 85, 86, 90, 91, 93, 99, 101-112, and 114.

As to claim 1, Butterfield does not disclose “[a] method of separating fluids successively introduced into a passage comprising the step of introducing a plug at an interface of the successively introduced fluids, wherein the plug comprises an outer body and a *detachable inner mandrel* attached to the outer body.” The plugs (11, 12) of Butterfield do not have inner mandrels at all. Rather, they have only central openings (unnumbered). A central opening is not a mandrel. Further, the central openings of Butterfield are not “detachable” as required by claim 1. Applicant notes that Butterfield discloses a mandrel (17). However, the plug (11, 12) of Butterfield does not comprise the mandrel (17). Rather, the mandrel (17) is a component of the running tool (13). “The upper and lower plugs 11 and 12 are releasably secured to a retrievable axially extending tubular mandrel 17 that extends through the plugs and forms a major component of the running tool 13.” (Col. 6, lines 17-21).

Accordingly, independent claim 1 and its dependents, claims 2-4 are patentable over Butterfield. Independent claims 5, 72, and 101 and their dependents, claims, 6-10, 12, 14, 16-18, 24, 27, 31, 73-83, 85, 86, 90, 91, 93, 99, 102-112, and 114, are patentable over Butterfield for analogous reasons.

Therefore, Applicant requests that Examiner withdraw her rejection of these claims and allow them to issue.

Claim Rejections 35 U.S.C. § 103(a)

Claims 19-23, 25, 26, 28, 29, 32, 33, 87-89, 97, and 98 have been rejected under 35 U.S.C. 103(a) as being unpatentable over North in view of Pluchek et al. (US 6,571,869) ("Pluchek"). Specifically, Examiner stated as follows in bold typeface:

EP 0869257 discloses a method and apparatus as disclosed above. However, the reference fails to teach a baffle adapter as called for in the claims.

US 6,571,869 teaches a method and apparatus having downhole plugs that includes a baffle adapter 125 for the purpose of placing a baffle collar above the cementing tool prevents the cement in the annulus from back flowing into the pipe.

It would have been considered obvious to one of ordinary skill in the art at the time the invention was made to have provided the apparatus of EP 0869257 with a baffle adapter in view of US 6,571,869 in order to permit plug systems to support high pressures.

Applicant respectfully traverses this rejection as to claims 19-23, 25, 26, 28, 29, 32, 33, 87-89, 97, and 98. These claims are deemed patentable over the prior art for the same reasons the independent claims upon which they depend are patentable. (See pages 10, 12, and 14 of this response).

Accordingly, the rejection of claims 19-23, 25, 26, 28, 29, 32, 33, 87-89, 97, and 98 should be withdrawn and these claims should be allowed.

SUMMARY

In light of the above amendments and remarks, Applicant respectfully submits that the application is now in condition for allowance and earnestly solicits early notice of the same. Should the Examiner have any questions, comments or suggestions in furtherance of the prosecution of this application, the Examiner is invited to contact the attorney of record by telephone, facsimile or electronic mail, as indicated below.

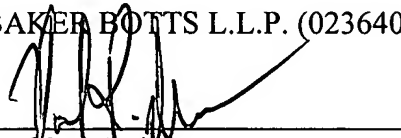
Applicant believes that there are no fees due in association with the filing of this Response. However, should the Commissioner deem that any fees are due, including any fees for any extensions of time, Applicant respectfully requests that the Commissioner accept this as a Petition therefore, and directs that any fees be debited from Baker Botts L.L.P., Deposit Account No. 02-0383, (*formerly Baker & Botts, L.L.P.*) Order Number 063718.0149.

Respectfully submitted,

BAKER BOTTS L.L.P. (023640)

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